

We claim:

1. A process for preparing an angiotensin converting enzyme (ACE) inhibitory peptide-containing hydrolysate comprising
 - 5 contacting a substantially oil-free seed meal or a flour with an organic solvent,
 - separating the meal or flour from the solvent, and
 - treating the meal or flour with at least one proteolytic enzyme to produce an ACE inhibitory peptide-containing hydrolysate.
- 10 2. The process of claim 1 further comprising separating the treated seed meal or flour from the hydrolysate.
3. The process of claim 1 or 2 wherein the solvent is at least one solvent
 - 15 selected from the group consisting of methanol, ethanol, propanol, butanol, acetone and ethyl acetate.
4. The process of claim 1 or 2 wherein the solvent is ethanol.
- 20 5. The process of any one of claims 1 to 4 wherein the solvent is an aqueous organic solvent.
6. The process of claim 5 wherein the solvent is 70:30 v/v ethanol:water.
- 25 7. The process of any one of claims 1 to 6 wherein the seed meal or flour is contacted with the solvent at a temperature from about 20°C to the boiling point of the solvent for a period of time from about one hour to about 24 hours.
- 30 8. The process of any one of claims 1 to 7 wherein the ACE inhibitory peptide-containing hydrolysate is ultrafiltered.

9. The process of claim 8 wherein the hydrolysate is ultrafiltered using an ultrafiltration membrane of pore size from about 1000 to about 100,000 MWCO.

5 10. The process of any one of claims 1 to 9 wherein the hydrolysate is dried to form a powder.

10 11. The process of any one of claims 1 to 10 wherein the seed meal or flour is from a plant selected from the group consisting of flax, canola, soybean, cottonseed, sunflower, peanut, mustard, pea, lentil, bean, chickpea, wheat, oats, barley, rye and buckwheat.

15 12. The process of any one of claims 1 to 11 wherein the at least one proteolytic enzyme is present at a concentration from about 0.25% to about 8.0% w/w.

20 13. The process of any one of claims 1 to 11 wherein the at least one proteolytic enzyme is present at a concentration from about 0.5% to about 4.0% w/w.

14. The process of any one of claims 1 to 13 wherein the at least one proteolytic enzyme is selected from the group consisting of a protease, a peptidase, a serine endopeptidase and a metalloendopeptidase.

25 15. The process of any one of claims 1 to 13 wherein the at least one proteolytic enzyme is selected from the group consisting of Alcalase 2.4L, Alkaline Protease L-FG, Neutral Protease NBP-L, Umamizyme, Protease P Amano 6, Peptidase R, Protease M "Amano", Proleather FG-F and Thermolysin.

30 16. The process of any one of claims 1 to 13 wherein the at least one proteolytic enzyme is an alkaline protease and the reaction mixture is

adjusted to an alkaline pH by addition of a base selected from the group consisting of NaOH, KOH and NH₄OH.

17. The process of claim 16 wherein the added base is KOH.

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18. The process of any one of claims 1 to 13 wherein the at least one proteolytic enzyme is an acid protease and the reaction mixture is adjusted to an acidic pH.

10 19. The process of any one of claims 1 to 18 wherein the degree of proteolysis is controlled by varying the incubation time.

15 20. The process of any one of claims 1 to 19 wherein the seed meal is canola meal and the hydrolysate contains at least one of peptides Val-Ser-Val and Phe-Leu.

21. The process of any one of claims 1 to 19 wherein the seed meal is flax meal or soybean meal and the proteolytic enzyme is a metalloendopeptidase.

20 22. A process for preparing an ACE inhibitory peptide-containing hydrolysate from flax or canola comprising
treating a substantially oil-free flax seed meal or a substantially oil-free canola seed meal with at least one proteolytic enzyme to produce an ACE inhibitory peptide-containing hydrolysate.

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23. The process of claim 22 further comprising separating the treated seed meal from the hydrolysate.

30 24. The process of claim 22 or 23 wherein the ACE inhibitory peptide-containing hydrolysate is ultrafiltered using an ultrafiltration membrane of pore size from about 1000 to about 100,000 MWCO.

25. The process of claim 24 wherein the hydrolysate is dried to form a powder.
26. The process of any one of claims 22 to 25 wherein the at least one proteolytic enzyme is present at a concentration of from about 0.25% to about 8.0% w/w.
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27. The process of any one of claims 22 to 26 wherein the at least one proteolytic enzyme is selected from the group consisting of a protease, a peptidase, a serine endopeptidase and a metalloendopeptidase.
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28. The process of any one of claims 22 to 26 wherein the at least one proteolytic enzyme is selected from the group consisting of Alcolase 2.4L, Alkaline Protease L-FG, Neutral Protease NBP-L, Umamizyme, Protease P
15 Amano 6, Peptidase R, Protease M "Amano", Proleather FG-F and Thermolysin.
29. The process of any one of claims 22 to 26 wherein the at least one proteolytic enzyme is an alkaline protease and the reaction mixture is
20 adjusted to an alkaline pH by addition of a base selected from the group consisting of NaOH, KOH and NH₄OH.
30. The process of claim 29 wherein the added base is KOH.
- 25 31. An ACE inhibitory peptide-containing hydrolysate prepared by the process of any one of claims 1 to 21.
32. An ACE inhibitory peptide-containing hydrolysate produced by partial proteolytic digestion of a flax meal or a canola meal.
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33. The hydrolysate of claim 32 prepared by the process of any one of claims 22 to 29.

34. The hydrolysate of any one of claims 31 to 33 wherein the hydrolysate has an ACE inhibitory IC₅₀ of less than 200 µg powder/ml.
35. A powder produced by drying the hydrolysate of any one of claims 31 to 34.
36. An edible product comprising the hydrolysate of any one of claims 31 to 34 or the powder of claim 35.
- 10 37. The product of claim 36 wherein the product is a food or a beverage
38. The product of claim 36 wherein the product is a food supplement.
- 15 39. The hydrolysate of any one of claims 31 to 34, or the powder of claim 35, or the product of any one of claims 36 to 38 comprising at least one of the peptides Val-Ser-Val and Phe-Leu.
40. A composition comprising at least one of peptides Val-Ser-Val and Phe-Leu and a carrier.
- 20 41. A peptide of the formula Val-Ser-Val.
42. A peptide of the formula Phe-Leu.
- 25 43. A method of inhibiting ACE activity in a mammal comprising administering to the mammal an effective amount of the hydrolysate of any one of claims 31 to 34, or the powder of claim 35, or the product of any one of claims 36 to 39 or the pharmaceutical composition of claim 40.
- 30 44. The method of claim 43 wherein the inhibition of ACE activity produces a lowering of elevated blood pressure in the mammal

45. Use of the hydrolysate of any one of claims 31 to 34, or the powder of claim 35, or the product of any one of claims 36 to 39 to treat elevated blood pressure in a mammal.